Table 1. The validated state transiti ns from a State Si(k) t State Sj(k+1)

	$S_h(k+1)$	$S_c(k+1)$	$S_s(k+1)$	$S_u(k+1)$	$S_p(k+1)$	$S_d(k+1)$	$S_e(k+1)$
$S_h(k)$	$R_{h,h}$	$R_{h,c}$	0	0	0	0	0
$S_c(k)$	$R_{c,h}$	$R_{c,c}$	$R_{c,s}$	0	0	0	0
$S_s(k)$	0	$R_{s,c}$	0	$R_{s,u}$	0	0	0
$S_u(k)$	0	0	$R_{u,s}$	$R_{u,u}$	$R_{u,p}$	0	0
$S_p(k)$	0	0	0	0	0	$R_{p,d}$	0
$S_d(k)$	0	0	0	$R_{d,u}$	0	$R_{d,d}$	$R_{d,e}$
$S_e(k)$	$R_{e,h}$	0	0	0	0	0	0

Equation (1), (2) and (3):

If,

- l denotes the year
- L is the current year
- m is the number of years with historical data available
- i denotes the day of the month
- j is the month of a year. (an exemplary time unit used for simplified demonstration purposes only)

Thus, $i \in [1,31]$, $j \in [1,12]$, l *and* m *are integers*.

$$\bar{x}_j = \frac{1}{mxn} \sum_{l=L-1}^{L-m} \sum_{i=1}^{n} x_{l,j,i} \qquad (where\ i \in [1,31]\ and\ j \in [1,12]) \qquad (1)$$

$$s_j = \frac{1}{(mxn-1)} \sqrt{\sum_{l=L-1}^{L-m} \sum_{i=1}^{n} (x_{l,j,i} - \bar{x}_j)^2} \qquad (where\ i \in [1,31]\ and\ j \in [1,12]) \qquad (2)$$

$$C_j = \bar{x}_j + t_{mxn-1}\, s_j \qquad (where\ i \in [1,31]\ and\ j \in [1,12]) \qquad (3)$$

Equation (4), (5) and (6):

$$d_{L,j,i} = \frac{x_{L,j,i} - \bar{x}_j}{\bar{x}_j} \text{x} 100 \qquad (L - year, j - month, i - day\, of\, month) \qquad (4)$$

$$w_{L,j,i} = \sum_{n=0}^{n=6} d_{L,j,i-n} \qquad (7 - days\ cumulated\ deviation) \qquad (5)$$

$$v_{L,j,i} = d_{L,j,i} - d_{L,j,i-1} \qquad (change\, of\, the\, daily\ deviation) \qquad (6)$$

Equation (7), (8) and (9):

$$\text{supp}(\alpha(k)) = \{d_{l<L,j,i}\,;\; F(d) \geq (1-\alpha)\} \tag{7}$$

$$\text{supp}(\beta(k)) = \{w_{l<L,j,i}\,;\; F(w) \geq (1-\beta)\} \tag{8}$$

$$\text{supp}(\delta(k)) = \{v_{l<L,j,i}\,;\; F(v) \geq (1-\delta)\} \tag{9}$$

Equation (10), (11), (12), (13), (14) and (15):

$$S_j(k+1) \Leftarrow \{S_i(k) \otimes R_{i,j} \otimes X_i(k),\ S_i(k) = k_w\, w_i\,(k)\} \tag{10}$$

$$X_i(k) \Leftarrow B_{i,m}(\alpha(k), \beta(k), \delta(k)) \otimes \begin{bmatrix} d_{i,m}(k) \\ w_{i,m}(k) \\ v_{i,m}(k) \end{bmatrix} \tag{11}$$

$$Y_i(k) \Leftarrow H_{i,n}\ \{(\gamma_0(k), \gamma_1(k),\ \ldots, \gamma_n(k)) \otimes \begin{bmatrix} S(k) \\ S(k-1) \\ \ldots \\ S(k-n) \end{bmatrix} \otimes G_i(k)\} \tag{12}$$

where

$$X \subset \prod_{z=1}^{Z} \overline{\text{supp}}\,(z) \tag{13}$$

$$\text{supp}(z) = \text{supp}(X_{z,1}) \times \text{supp}(X_{z,2}) \times \text{supp}(X_{z,3}) \tag{14}$$

$$Y_i = (Q_{i,h}, T_{i,h}, P_{i,h}) \tag{15}$$